MARITIME HERITAGE MINNESOTA

Ann Merriman
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CLEAN WATER LAND & LEGACY AMENDMENT

Minnesota Suburban Lakes Projects Series

Crystal Lake Sonar Survey Project Report

Acknowledgments

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"...grants have allowed a small St. Paul-based nonprofit, Maritime Heritage Minnesota (MHM), to re-establish the discipline of underwater archaeology in Minnesota. Without this support, MHM could not have conducted its groundbreaking nautical archeological and maritime historical research."

~Steve Elliott, Former Minnesota Historical Society CEO and Director, January 2015

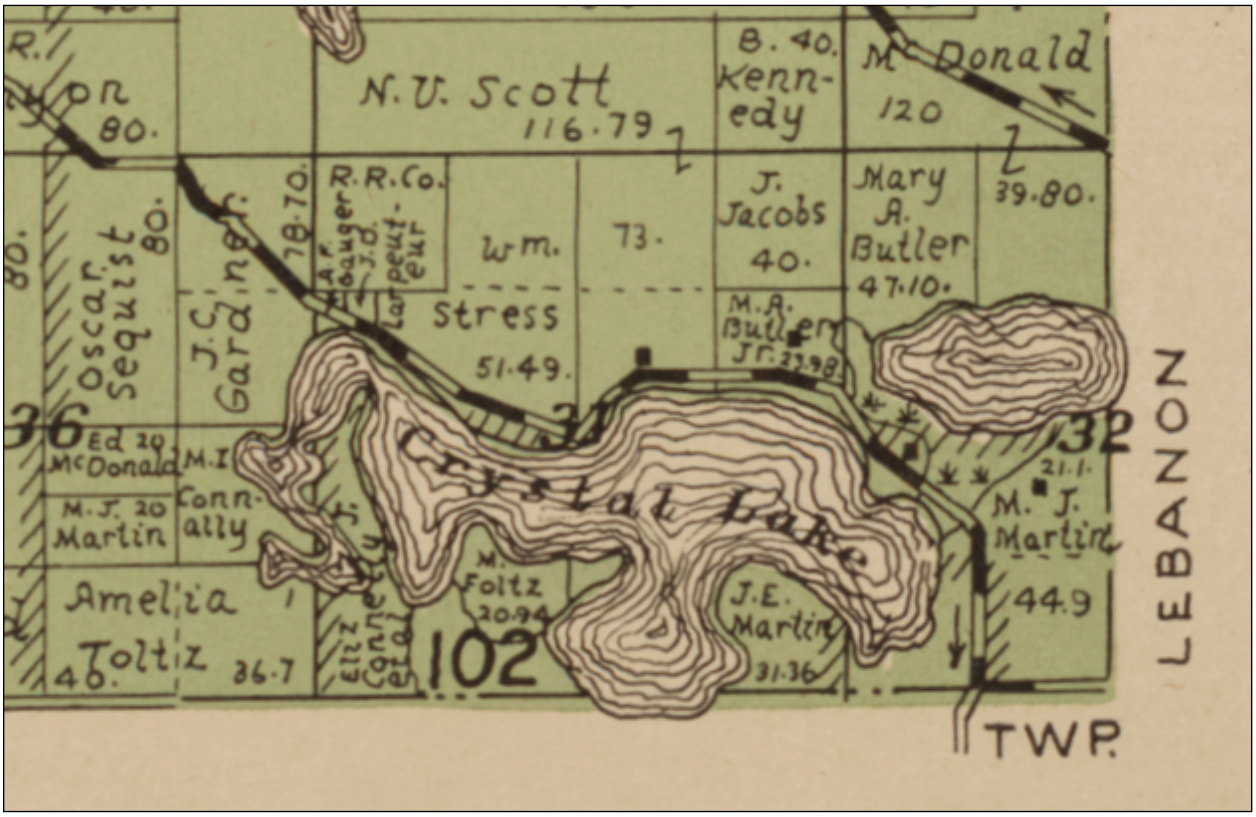
Introduction

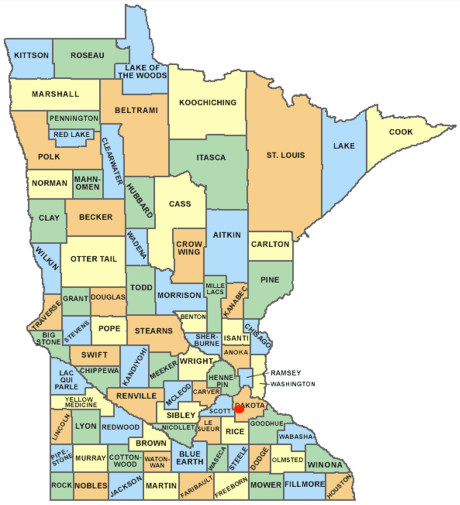
Wrecks and the artifacts associated with them tell a story. Removing or otherwise disturbing artifacts, treating them as commodities that can be sold, obliterates that story. Nautical archaeological and maritime sites are finite, and are significant submerged cultural resources. Nautical, maritime, underwater, maritime terrestrial – Maritime Heritage Minnesota's (MHM) deals with all of these types of sites throughout the State of Minnesota. MHM's Mission is to document, conserve, preserve, and when necessary, excavate these finite cultural resources where the welfare of the artifact is paramount. MHM is concerned with protecting our underwater and maritime sites – our shared Maritime History – for their own benefit in order for all Minnesotans to gain the knowledge that can be obtained through their study. MHM's study of wrecks does not include the removal of artifacts or damaging the sites in any way. MHM does not raise wrecks or 'hunt' for 'treasure'. Submerged archaeological sites in Minnesota are subject to the same State statues as terrestrial sites: the Minnesota Field Archaeology Act (1963), Minnesota Historic Sites Act (1965), the Minnesota Historic District Act (1971), and the Minnesota Private Cemeteries Act (1976) if human remains are associated with a submerged site. Further, the case of *State v. Bollenbach* (1954) and the Federal Abandoned Shipwrecks Act of 1987 provide additional jurisdictional considerations when determining State oversight and "ownership" of resources defined by law as archaeological sites (Marken, Ollendorf, Nunnally, and Anfinson 1997, 3-4). Therefore, just like terrestrial archaeologists working for the State or with contract firms, underwater archaeologists are required to have the necessary education, appropriate credentials, and hold valid licenses from the Office of the State Archaeologist (OSA).

Research Design

The Crystal Lake Sonar Survey (CLSS) in Dakota County is part of the MHM series of Minnesota Suburban Lakes Survey Projects (MSLS). The CLSS is a pre–disturbance Phase 1 underwater archaeological side and down imaging sonar survey; Lotus Lake and Lake Minnewashta in Carver County were also surveyed. Additionally, MHM conducted dive reconnaissance in Forest Lake in Washington County that was surveyed in Spring 2020. This project is a primary step toward the identification and documentation of submerged cultural resources in Minnesota. The purpose of the MSLS Project is to increase the collective maritime archaeological and historical knowledge of Minnesotans through the remote-sensing documentation of suburban lakes. The specific goal of sonar survey is the recording of anomalies on the lake bottoms and identifying their possible natures. The side and down-imaging sonar unit creates high-resolution digital images; the sonar data accumulated during the fieldwork will be reviewed and analyzed with the intention of identifying anomalies that may be

human-made sites such as wrecks (dugout canoes, steamers, sailboats, rowboats, canoes, barges, motorboats), maritime infrastructure (pier/dock remains, water intakes), other maritime-related artifacts (steam boilers, fish houses), vehicles (cars, trucks, snowmobiles), and other objects. In the future, the positive identification – and significance – of the anomalies will be confirmed for Crystal Lake, Lotus Lake, and Lake Minnewashta through underwater archaeological reconnaissance fieldwork using SCUBA, digital video, measured drawings, and maritime historical research. Regarding Forest Lake, of the 49 anomalies identified after reviewal of the sonar data, MHM investigated 8 targets for this project using SCUBA. The lakes evaluated and assessed during this MSLS Project were chosen for investigation because of their size, location, and the confirmed maritime activities occurring on and around them, determined by graphic and preliminary historical research.



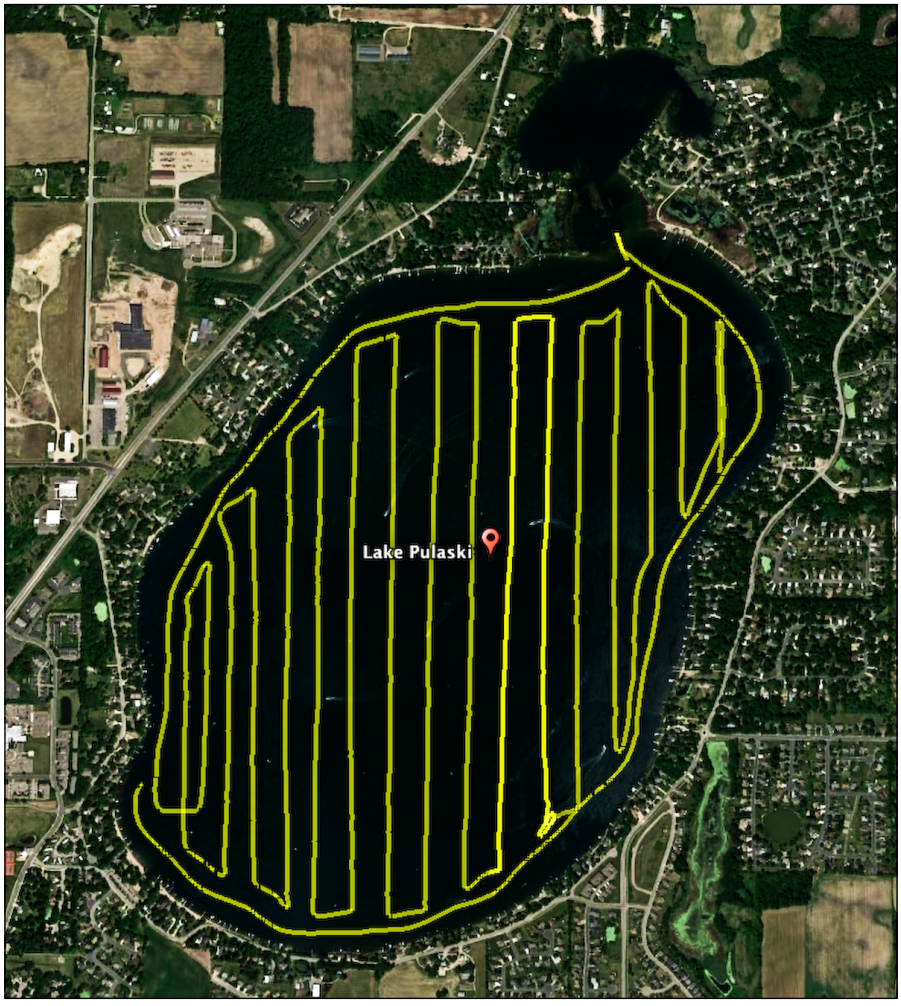


A 1916 plat map of the area round Crystal Lake (Webb 1916, 9).

The red circle marks the location of Crystal Lake in Burnsville in Dakota County.

Methodology

MHM completed the remote sensing side and down-imaging sonar scanning survey of the 293.24-acre Crystal Lake in southeastern Burnsville and northern Lakeville in Dakota County on October 19, 2020. MHM has developed a strategy when sonar scanning lakes that produces the clearest images of the bottom and thorough coverage. Firstly, MHM's research boat *Anomaly 51*, with a sonar transducer attached to the hull that extended below the vessel's centerline, scanned the periphery of the lake with a 50-100 foot side-imaging beam on both port and starboard. This 100 or 200-foot area also covered the bottom below the boat with the transducer's down-imaging beam. After the completion of the peripheral scanning, transects running as close to either north-south or east-west as the wind allowed, depending on the shape of the lake. While it is not impossible to scan with the wind hitting the boat from port or starboard in the case of strong winds (and other boat's wakes), the sonar footage that recorded in rough waters can be distorted and of low quality. In the case of Crystal Lake, east-west transects were chosen because that scheme served the lake's shape that is longer than it is wide, and wind was not a factor. During sonar data reviewal, MHM recognized 24 anomalies that might be wrecks, maritime sites, and other submerged cultural resources.



An example of north-south transects, also known as 'Mowing the Lawn'.

Archaeology and History

In archaeological terms, the area around Crystal Lake in Dakota County south of Minneapolis was populated during the Woodland Period as evidenced by the Crystal Lake Island Findspot Site (21-DK-42) that was comprised of a single stemmed point. In addition to this 'domestic' site, grave sites were identified in the late 19th Century as obvious markers on the lakeshore. The Crystal Lake Mounds II Site (21-DK-ah) was comprised of 4 or 5 burial mounds on the north side of the lake, overlooking the body of water. The Butler Mounds Site (21-DK-ag), also on the north side of the lake in the yard of Thomas Butler, was comprised of 2 mounds as well. Early reports from the area described Native American use of the area for deer hunting and the use of Buck Hill as a campground. The 1854 USGS land surveyors provided Minne Elk with its post-contact name of 'Crystal Lake' because of its "clear shining surface". The lake had abundant pickerel and pike, with a fine sand and pebble shoreline. Several large tracts of land were platted around the circumference of the lake, primarily farm land along with some rustic rental cabins for fishermen. The first hotel/resort in Burnsville was established on Crystal Lake by Lewis and Esther Judd in 1880 - the Lakehouse Hotel. The Judds had invested 8 years worth of improvements to their land, the shoreline, and their home that they opened to travelers as a hotel. Reportedly, the Lakehouse Hotel was one of the "finest points for a summer resort in the state. [Judd] was induced by parties from the south...to open his home to excursionists...and found the experiment a success." Further, the Judds constructed rustic cabins beginning in 1881 to house the more casual traveler looking for simple accommodations as a base for a weekend or few days of fishing. Judd continued to farm their 157 acres of land, worked at carpentry, and in September 1881, he became the Post Master of the newly-established Burnsville Township US Post Office; it was called 'Judd'. Additionally, on land adjacent to the Judd's home/hotel, the Butler family lived in one of the few long-surviving log cabins on the lake. Of note is the visit to Crystal Lake on a fishing excursion by Charles Comiskey[1] in September 1899, then the manager of the "St. Paul base ball club". At various times, newspapers advertised the availability of land tracts on the lake. One of them touted the proximity of a famous race horse and his

The Judd's Lakehouse Hotel (MNHS MD2.9BV3.1r3).

One of the Judd cabins, 1881 or later (MNHS MD2.9BV3.2rw5).

[1]Just 1 year later, Charles Comiskey was in Chicago and owner of the White Sox. A decade later he was overseeing the construction of Comiskey Park and he owned the team until his death in 1931, having survived the Black Sox scandal over a decade previously.

A small boat owned by Judd's Lakehouse Hotel for the use of its patrons. This boat is a flat-bottomed model, probably a Fisherman's Friend (MNHS GV3.61r36).

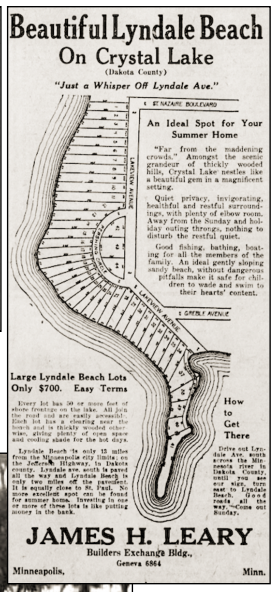
One of the rustic Judd cabins in the mid-20th Century (Burnsville Historical Society).

The Butler Cabin on Crystal Lake around 1885 (MNHS MD2.9BV3.2p1).

Groups at Judd's Lakehouse Hotel in the 1920s and 1950s (MNHS GV3.62r71, MNHS MD2.9BV3.1r2).

Crystal Lake ice harvesting around 1920 (Burnsville Historical Society).

wealthy owner in 1905: "Six acres on Maple Peninsula on famous Crystal Lake, Dakota county...only four [miles] from village of Millionaire Savage...the home of the world beater "Dan Patch", lies fine, rich, fertile soil, completely covered with massive maple, ironwood and a few white oak". In 1915, 1920, and 1923, efforts to further develop the shores of Crystal Lake involved the planned communities of Crystal Oaks and Lyndale Beach, particularly since the lake was situated on major transportation lines: the Dan Patch railroad & an entirely-paved Lyndale Avenue. Lyndale served the purpose that highway 35/35W/35E does today. A well known and long lived business on the east side of the lake founded by Oscar Dally, called Dally's Place/Dolly's Place, rented small watercraft for daily use for fishing and pleasure boating (Anfinson and Peterson 1979; Burnsville Historical Society 1923; *Minneapolis Tribune* 1905; Neill and Williams 1881, 323, 326-327; *St. Paul Daily Globe* 1881, 1899; US Federal Census 1880; Winchell and Upham 1888, 101).



Promotions for land development on Crystal Lake (*Minneapolis Sunday Tribune* 1915; 1923).

Dally's Place, later Dolly's Place, on the southeast bay of Crystal Lake (Burnsville Historical Society).
The Oscar Dally cottage in 1920 and a large motoring group visiting the cabin in 1922 (MNHS MD2.9BV3.2p3, MNHS MD2.9BV3.2p2).
The little girl is standing in front of an Oscar Dally-owned rental rowboat; note the ladies in the canoe in the background (Burnsville Historical Society).
Two wooden wineglass stern rowboats rented by Oscar Dally (MNHS MD2.9BV4p1).

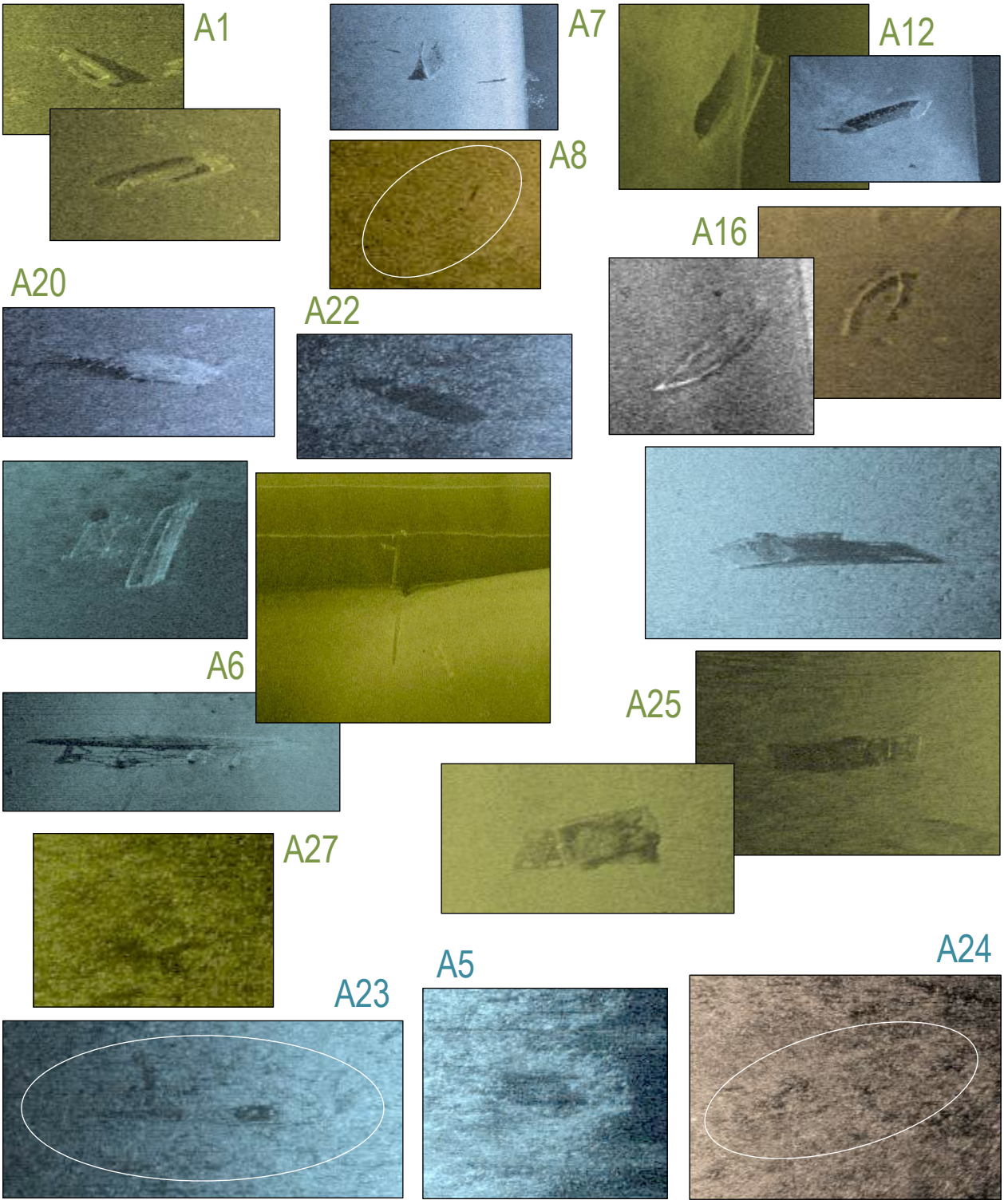
The Dally cottage in the later 20th Century. Note the street signs: Dally Street and Martin Avenue (Burnsville Historical Society).

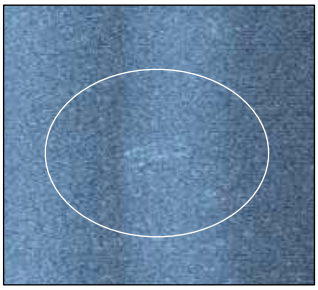
Teenagers on a large 4-pontoon recreational raft on Crystal Lake with a summertime Buck Hill ski area in the background (Burnsville Historical Society).

Crystal Lake Sonar Survey Results

Pictorial evidence of watercraft use on Crystal Lake in the early 20th Century is linked to Dally's/Dolly's Place and its small fishing boats. However, 1 image of a boat outside 1 of the Judd cabins confirms that the Judd family holiday cabins and the Lakehouse Hotel surely provided small fishing boats for their patrons. MHM has located and identified small watercraft wrecks on the bottom of smaller Minnesota suburban lakes including nearby Prior Lake, Christmas Lake, Medicine Lake, Lake Johanna, and Forest Lake. MHM has also identified and documented small wrecks in larger lakes including Lake Minnetonka, White Bear Lake, and Lake Waconia. MHM has identified 30 anomalies in the sonar footage recorded during the remote sensing survey of Crystal Lake. MHM has determined that the acoustical signatures of 5 anomalies indicate they are wrecks (A1, A7, A8, A12, A16), another 6 targets are probable wrecks (A2, A20, A21, A22, A24,

A27), 4 are possible wrecks (A11, A26, A28, A29), 1 is a boat lift with a canopy (A6),1 anomaly may be a dock (A5), 1 target is a vehicle (A25), 2 sites may be snowmobiles (10, 18), and 11 targets are made of various shapes (A3, A4, A9, A13, A14, A15, A17, A19, A23, A30, A31). The investigation of these 30 anomalies using SCUBA will take place in the near future, prioritized by color so that the chosen targets will answer the most archaeological questions pertaining to their nature, age, condition, and historical significance: High **(1)**, Medium **(2)**, Low **(3)**.





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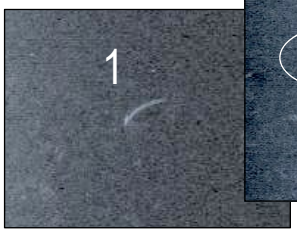

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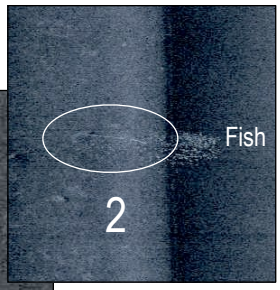

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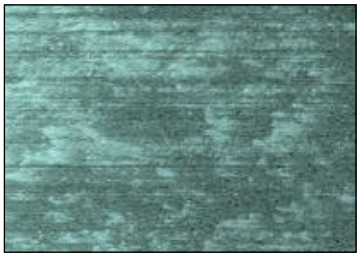

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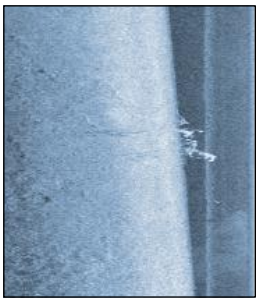

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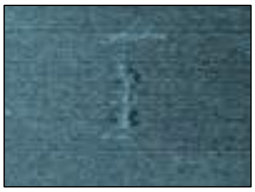

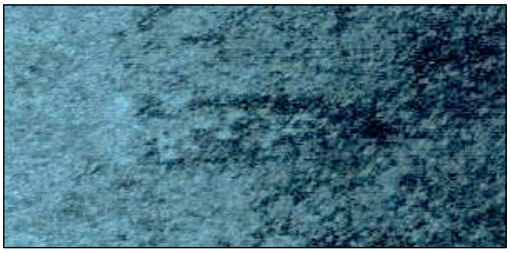

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A17

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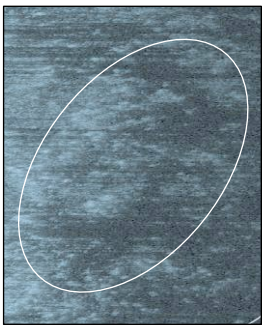

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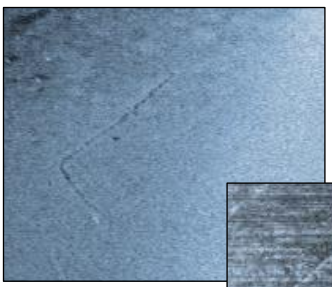

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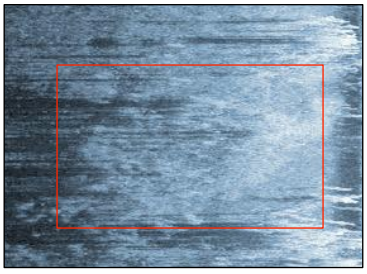
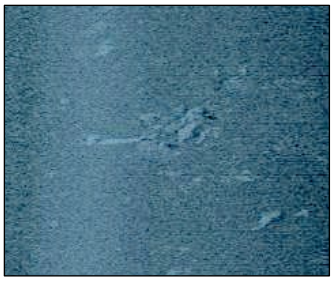
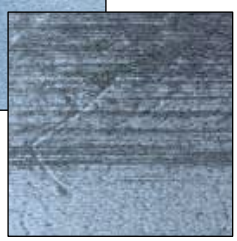


A14





Conclusion

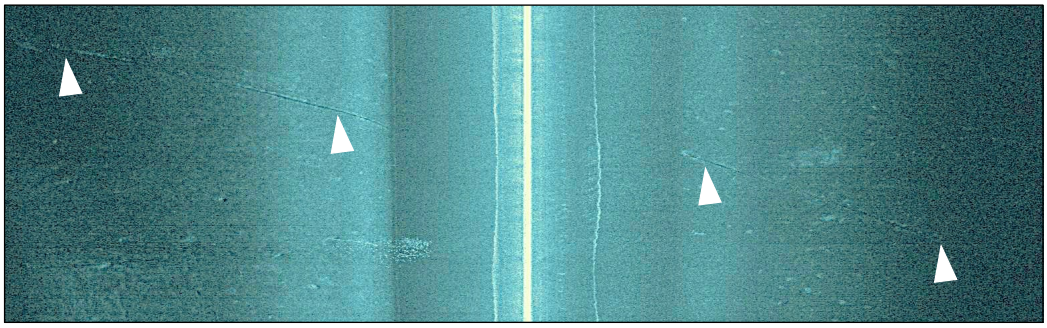
During the Crystal Lake Sonar Survey, MHM recorded several interesting and promising anomalies using remote sensing side and down-imaging sonar. Of the 31 anomalies recognized in the data after review A1, A7, A8, A12, A2, A16, A20, A22, A6, A25, A10, and A30 will produce the greatest amount of archaeological data that will assist in future research and diving planning. In particular, the 5 wrecks (A1, A7, A8, A12, A16) will greatly enhance our shared knowledge of Minnesota's Maritime History. The investigation of A7, A8, and A16 will answer archaeological questions since they are likely constructed of wood; A7 has a missing or loose transom with a stern knee in place. Additionally, it appears that A8 and A16 may have wineglass sterns, based on the narrow nature of the stern ends of the wrecks. The sonar signature of Anomaly 8, of the wreck targets, is the least defined and is nearly buried. Contrastingly, A1 is substantially constructed - possibly out of fiberglass in consideration of its acoustical signature - with an issue on her port bow. Anomaly 12 is a larger wreck and because she is capsized, her bottom is seen in detail, and her keel is evident, and possibly the lower unit of an outboard or an inboard/outboard motor. Based on the sonar signature, A12 is probably constructed of aluminum. The clarity of the sonar image 1 for Anomaly 2 suggests it may be a wreck on its side, and while image 2 has much less clarity, the presence of fish around it indicates it rises off the lake bottom enough to attract them. Contrastingly, Anomaly 20 could be a wreck, but its features are not sharply outlined like A1, A7, A12, and A16. However, it could have vegetation growing out of it and may still be a sunken watercraft.

As with similar sonar images in other lakes MHM has surveyed using sonar, the large Anomaly 6 has the distinct signature of a boat lift with its canopy frame still attached. In this way, A6 is unique; the boat lifts or canopy frames that MHM has identified and documented to date were found by themselves, not in combination. To contrast, another target is large like A6, but it has much greater mass and is by far the most 'solid' object on the bottom of Crystal Lake. MHM contends Anomaly 25 is a vehicle, possibly a truck. Further, the shape and details evident in Anomalies 10 and 18 suggest that they may be snowmobiles; these types of vehicles are commonly found on the bottom of Minnesota's lakes. Dive reconnaissance will answer the questions around these 3 probable vehicles.

Several Crystal Lake targets resemble boat outlines; some of them are in vegetation while others do not rise significantly above the lake bottom in clear areas. These may be wrecks or false targets such as bottom contours, bottom matrix changes, or plants with interesting acoustical shadows. Only SCUBA reconnaissance can identify these 8 anomalies: A22, A24, A27, A26, A21, A11, A23, and A28. In consideration of another type of maritime target, 1 strong acoustical signature (A5) suggests by its shape and details, to be a wooden dock section. Other shapes on the lake bottom cannot be identified (A4, A14, A15), while Anomaly 3's rectangular signature suggests it may be a barge. The remaining 6 anomalies are comprised of irregularly-shaped objects whose identification is not evident through their sonar signatures. Lastly, the sonar unit recorded a strong acoustical signature of the track of a cable or conduit on the lake bottom, an attribute found in nearly every lake MHM has surveyed (Anomaly 31). However, not every cable or conduit has a strong signature like A31. Using SCUBA, video, photographs, measurements, and historical research in the near future will allow

MHM to understand these anomalies by determining their nature, function, condition, and placement into the underwater archaeological and maritime historical record.

A31



MHM has recognized 116 anomalies on the bottom of the 4 lakes documented during this MSLS Project: Crystal Lake, Lotus Lake, Lake Minnewashta, and Forest Lake. Particularly important is the identification of 16 wrecks through their distinctive sonar signatures, another 26 possible wrecks, 19 probable wrecks, 2 boat lifts, canopies, fish houses, vehicles, and other maritime sites. Further, the underwater archaeological reconnaissance of Forest Lake confirmed the identifies of 6 wrecks and 1 boat lift. The exact nature of the remaining wrecks and other sites will be determined during subsequent projects centered on their investigation by using SCUBA. These future studies will greatly enhance our shared maritime history through the recognition of submerged cultural resources and the stories behind their construction and disposition on the bottom of these particular 4 Minnesota lakes. The diversity of nautical, maritime, and underwater sites so far identified by MHM in Minnesota's lakes are tangible examples of the rich maritime history of the area. Through research, diving on wrecks and anomalies to collect pertinent data, and ensuring that the collected information is accessible by the public, MHM will continue to investigate Minnesota's submerged cultural resources into the future. The results of the MSLS Project summarized above is connected to all the work that will come after its completion. It is clear – through this Phase 1 remote sensing survey – that the types of sites that exist in the 4 smaller lakes documented during the project are diverse, archaeologically and historically significant, and worthy of great attention. Lastly, the significant data produced during this Crystal Lake project has and will be used for comparison purposes as MHM identifies wrecks and maritime resources on the bottom of other Minnesota lakes. To date, these bodies of water include Christmas Lake, Prior Lake, Lake Johanna, Medicine Lake, Lake Pulaski, White Bear Lake, Lake Waconia, and Lake Minnetonka.

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